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Elliptical LASEK may have edge for astigmatic patients

By Stefanie Petrou Binder MD

NICE — A new variation of LASEK called excimer laser sub-epithelial ablation which uses elliptical instruments produces excellent outcomes in astigmatic eyes. Chris Lohmann MD, University Clinic, Regensburg, Germany, reported a talk at the ESCRS Congress in conjunction with the Rayne Institute, St Thomas' Hospital, London, on 2 October 2002.

The researchers performed ELSA on 34 astigmatic patients. The cylindrical refractive error was between 1.0 D and 3.50 D, with a mean of 1.71 D and the spherical refractive error between -0.75 D and -8.75 D with a mean of -4.26 D. Maximum follow-up was six months in all eyes.

Dr Lohmann's results showed the epithelial flap could be created without postoperative complications in all 34 eyes.

The researchers observed some dead superficial epithelial cells beneath the contact lens (bCL). They did not detect erosion of the epithelium using fluorescein on the third postoperative day.

Most eyes showed a slight epithelial oedema at day three prior to the removal of the contact lens. The epithelium did not show signs of instability during the postoperative period and patients did not report any signs of epithelial breakdown.

At six months, all treated eyes had a postoperative spherical refraction of with a mean of -0.04 D. Of these, 92% were within +/- 0.50 D of target refraction. Cylindrical postoperative refraction was 0.27 D, ranging between 0.0 D and 0.50 D as reported.

The ELSA instruments consist of an elliptical-shaped microtrephine (11.0 mm) with a 70 micron calibrated blade and an elliptical shaped alcohol cone (8.5 mm x 8.5 mm).

The epithelial trephine has a blade on the corneal side that cuts 70 microns of epithelium and Bowman's layer. The blade is interrupted on one side of the trephine leaving a hinge of 2.0 mm.

The ELSA instruments create a circular epithelial flap that exceeds the 8.0 mm maximum cut achieved by current methods.

This approach to astigmatic correction using the excimer laser involves ablation from the cornea in a cylindrical fashion. The toric ablation patterns are generated from 6.0 mm to 10.0 mm long in one of the cylindrical axes.

The surgeons performed the ELSA procedure using Camellin's LASEK technique with topical anaesthesia. After incising the corneal epithelium with the epithelial trephine (Geuder), they placed the alcohol cone on the corneal surface encircling the trephine incision.

The cone was filled with 20% ethanol in distilled water and left for 30 seconds. The cornea was then dried and thoroughly washed with a balanced salt solution.

rinse out the remaining alcohol.

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